



Headlands Institute

Mission

The Headlands Institute is dedicated to teaching science and environmental education in nature's classroom to inspire a personal connection to the natural world and responsible actions to sustain it.



B-WET Program

Organization: Headlands Institute, Field Science Program,
Education Department

Project Title: Engaging Urban Schools In Watershed
Education

Priority Area: Meaningful Watershed Educational
Experiences for Students



Partners & Audience

Project Partners:

- **10 urban public schools in San Francisco and Alameda counties**
- **NOAA's LiMPETS Program**
- **Golden Gate National Parks Conservancy**
- **Golden Gate National Recreation Area**

Target Audience:

- **Low-income students (grades 4-6) and their teachers.**
- **87% of students participate in the federal Free & Reduced Lunch program.**
- **53% of students are English Language Learners.**
- **53% female; 47% male.**



Goals & Objectives

Goal: To engage urban, low-income students in meaningful watershed investigations; the scientific method, critical thinking and inquiry; marine ecology studies; and stewardship.

Objectives: In order to achieve our goal, Headlands Institute will:

- Bring 10 public schools (representing almost 600 underserved students) to our residential Field Science Program;
- Offer these schools 20,000 total program hours of hands-on field and community-based watershed investigations and environmental education;
- Participate in NOAA's LiMPETS program; and
- Complete 2,000 hours of student-driven stewardship projects in the Golden Gate National Recreation Area (GGNRA) and in students' home communities.



Project Overview

Location: Marin Headlands, GGNRA

Number of Outdoor Experiences:

- 376 students;
- 63 adults;
- 15,120 program hours of watershed education;
- 2,520 hours of student-driven stewardship.

Issue/Focus: Watershed Investigations and Education

Pre-/Post-Activities: 80% of schools received pre-trip lessons; 20% received post-trip lessons

Data Collection:

- Pre- and post-trip learning assessments (watershed);
- Field observation evaluation forms (inquiry);
- Documentation of people and hours (GGNRA stewardship);
- Stipend tracking and followup (community stewardship).

Evaluation Plan

Tools:

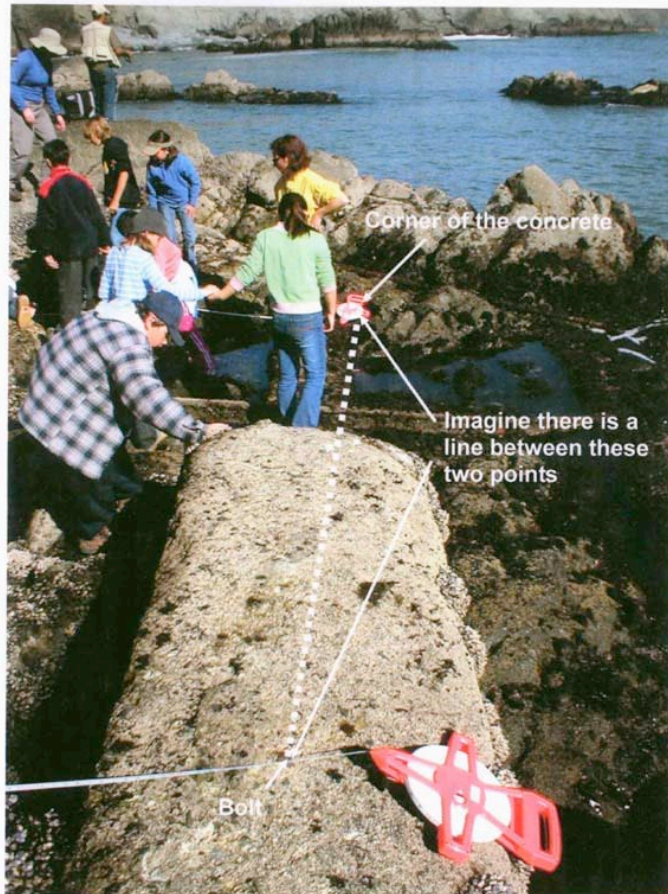
- Learning assessments;
- Field evaluation forms;
- Data collection sheets and project evaluation forms.

Methods:

- Embedded Assessment – used to demonstrate students' prior content knowledge, inform design of field-based investigations, and compare gains between time periods.
- Field Observations – used to improve teaching practice of education staff and, when summarized, to indicate overall trends, successes, and challenges.
- Stewardship Project Data Collection – used to understand the design and implementation of school-based stewardship projects and inform avenues for better support.

Products

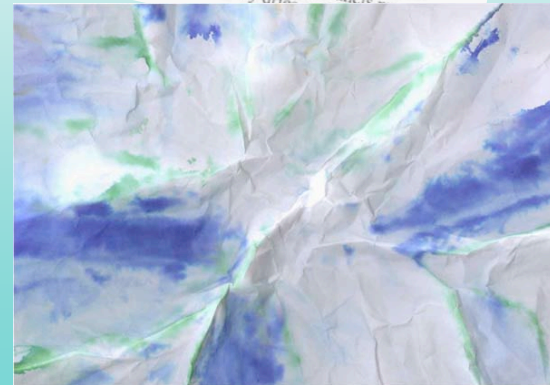
Study area photo #2



LiMPETS Study Area Guidelines

Guidelines for HI Educators

- Working a BWET School... Things to Know!*
1. **Pre/Post:** Francis will be doing a pre and post trip with them! He *may* be able to introduce the circle of scientific logic in advance, so check with him.
 2. **Inquiry:** Based on their selected 'area of emphasis,' you'll most likely be doing some kind of *inquiry* investigation. The inquiry investigation should *not* dominate your entire program but is one of a few big themes throughout. It need *not* be a whole day affair, either. Rather, it could be done in a 2 hour block or could be multiple parts spread out over multiple days.
 3. **Presenting findings.** You will need to do some kind of *presentation* of your project at some point. It's most fun when groups present to each other so check in with the other FSEs on the school and pre-plan.
 4. **Evaluation:** You will likely be observed during the investigations and/or presentations by an Ed Team member. We will check in with you about your plans so we can join at the right time.
 5. **Nursery:** Try to have at least one FSE on your school sign up for the Nursery. Others who don't should do some kind of stewardship project and be sure that you *document* all your numbers and hours during your post-trip debrief.
 6. **Home stewardship:** The school becomes eligible for a \$250 mini-grant for doing a follow-up stewardship project that benefits their home watershed. Please introduce this early and talk it up all program. Please find time on your *last day to brainstorm* with them on project ideas. Francis will give you the *form* they'll need to fill out to earn their mini-grant. (The money drives the program.)



Paper Watershed Activity



Program In Action

Bird Investigation



Watershed in the Sand



Macro-invertebrate Inquiry

Hiking the Watershed



Creek Inquiry



Lessons Learned

Program Highlights:

- **Provided programs to 376 students and 63 adults (9 schools).**
- **Increased level of stewardship in GGNRA and communities.**

Evaluation Highlights:

- **Field observations/sharing improved teaching practices;**
- **Evaluation data helped to create new staff training modules.**

Changes to Evaluation Plan:

- **Modified assessment tools for watershed/inquiry emphases.**

Changes to Project:

- **Greater emphasis on whole teaching day and best practices;**
- **New staff position to focus on delivery of pre/post-trip lessons;**
- **Inquiry curriculum given greater flexibility to better address needs and skill level of students.**